

10/069482

JC19 Rec'd PCT/PTO 27 FEB 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

MULLINS

Atty. Ref.: 1483-21

Serial No. Unknown

Group:

National Phase of: PCT/GB01/00805

International Filing Date: 23 February 2001

Filed: February 27, 2002

Examiner:

For: SATELLITE COMMUNICATIONS

\* \* \* \* \*

February 27, 2002

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

**PRELIMINARY AMENDMENT**

Prior to calculation of the filing fee and in order to place the above identified application in better condition for examination, please amend as follows:

**IN THE SPECIFICATION**

Page 1, after the title insert the following:

-- This application is the US national phase of international application

PCT/GB01/00805 filed February 23, 2001 which designated the U.S. --.

**IN THE CLAIMS**

Please cancel claims 1 through 28 and add new claims 29 through 56 as follows:

29. (New) A satellite system comprising at least one satellite; at least one Earth station, and a plurality of user terminals,

the satellite being arranged to provide a link between each user terminal and the Earth station, via communications channels,

each channel comprising one or more timeslots in a repeating time frame on one or more frequencies, carried by a feeder link beam between said satellite and the or each said Earth

## MULLINS

Serial No. **Unknown**

station, and one of a plurality of user terminal link beams between the satellite and the user terminals,

the satellite comprising a multiplexer for multiplexing the channels from multiple said terminal link beams onto each said feeder link beam, and a demultiplexer for demultiplexing the channels from onto each said feeder link beam onto multiple said terminal link beams;

and further comprising at least one router for assigning channels to and from particular said terminal link beams in response to control signals from said Earth station,

wherein the Earth station is arranged to send, during a first said frame period, channel assignment signals relating to channel assignments in a following said frame period,

and the satellite is arranged to control the router in accordance with said channel assignment signals in said following frame period.

30. (New) A system according to claim 29, in which said following frame period is the next following frame period.

31. (New) A system according to claim 30, in which the number of said slots in a said frame in the from-terminal direction is different to that in the to-terminal direction.

32. (New) A system according to claim 31, in which the length of a said frame in the from-terminal direction is the same as that in the to-terminal direction.

## MULLINS

Serial No. Unknown

33. (New) A system according to claim 31, in which the bandwidth provided by each of said slots in a said frame in the from-terminal direction is the same as that in the to-terminal direction.

34. (New) A system according to claim 31, in which there are more said timeslots in the to-terminal direction than in the from-terminal direction.

35. (New) A system according to claim 29, in which the number of slots in a said frame is variable.

36. (New) A system according to claim 29, in which the satellite comprises apparatus operable to time-demultiplex said slots of each frame and said router is arranged to route slots of a single frame to different frequencies, or vice-versa, and to vary the routing of slots of a said frame on a said frequency.

37. (New) A system according to claim 35, in which the satellite comprises apparatus operable to time-demultiplex said slots of each frame and said router is arranged to route slots of a single frame to different frequencies, or vice-versa, and to vary the routing of slots of a said frame on a said frequency, and wherein the length of the time-demultiplexer apparatus is variable to accommodate said variable number of slots.

38. (New) A system according to claim 29, in which a single said beam is provided for each said user terminal.

39. (New) A system according to claim 29, comprising a plurality of said satellites covering a region of the Earth.

40. (New) A system according to claim 39, in which said satellites form a non-geostationary constellation.

41. (New) A system according to claim 40, in which said constellation provides global coverage.

42. (New) A system according to claim 39, in which the or each satellite comprises apparatus operable to apply a Doppler shift correction to each said beam.

43. (New) A system according to claim 29, in which said user terminals comprise handheld terminals.

44. (New) Channel allocation apparatus for use in the system of claim 29.

45. (New) Apparatus according to claim 44, said apparatus being provided at a said Earth station.

46. (New) A satellite for use in the system of claim 29.

**MULLINS**

Serial No. **Unknown**

47. (New) A user terminal for use in the system of claim 29.

48. (New) A satellite system comprising at least one satellite; at least one Earth station,  
and a plurality of user terminals,

the satellite being arranged to provide a link between each user terminal and the Earth  
station, via communications channels,

each channel comprising one or more timeslots in a repeating time frame on one or more  
frequencies, carried by a feeder link beam between said satellite and the or each said Earth  
station, and one of a plurality of user terminal link beams between the satellite and the user  
terminals,

the satellite comprising a multiplexer for multiplexing the channels from multiple said  
terminal link beams onto each said feeder link beam, and a demultiplexer for demultiplexing the  
channels from onto each said feeder link beam onto multiple said terminal link beams;

and further comprising at least one router for assigning channels to and from particular  
said terminal link beams in response to control signals from said Earth station,

wherein there are more said timeslots in the to-terminal direction than in the from-  
terminal direction.

49. (New) A satellite system comprising at least one satellite; at least one Earth station,  
and a plurality of user terminals,

the satellite being arranged to provide a link between each user terminal and the Earth  
station, via communications channels,

each channel comprising one or more timeslots in a repeating time frame on one or more frequencies, carried by a feeder link beam between said satellite and the or each said Earth station, and one of a plurality of user terminal link beams between the satellite and the user terminals,

the satellite comprising a multiplexer for multiplexing the channels from multiple said terminal link beams onto each said feeder link beam, and a demultiplexer for demultiplexing the channels from onto each said feeder link beam onto multiple said terminal link beams;

and further comprising at least one router for assigning channels to and from particular said terminal link beams in response to control signals from said Earth station,

wherein the number of slots in a said frame can be varied.

50. (New) A system according to claim 49, in which said number can be varied independently for each said frequency channel.

51. (New) A method of TDMA satellite communications with a user terminal, in which the satellite separately routes individual TDMA bursts of a given frequency channel and varies said routing from frame to frame.

52. (New) A method of TDMA satellite communications with a user terminal, in which the number of said slots in a said frame in the from-terminal direction is different to that in the to-terminal direction.

**MULLINS**  
Serial No. **Unknown**

53. (New) A method according to claim 52, in which the bandwidth of said slots is the same in the from-terminal direction to that in the to-terminal direction.

54. (New) A method according to claim 52, comprising varying the number of said slots allocated to a user terminal.

55. (New) A method according to claim 52, comprising varying the number of said slots in a said TDMA frame.

56. (New) A method according to claim 55, comprising varying the number of said slots in a said TDMA frame on a first frequency differently to that on a second frequency.

**REMARKS**

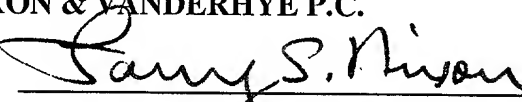
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

The above amendments are made to place the claims in a more traditional format.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By:

  
\_\_\_\_\_  
Larry S. Nixon  
Reg. No. 25,640

**LSN:lmy**

1100 North Glebe Road, 8th Floor  
Arlington, VA 22201-4714  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100